ECHINOCEREUS NICHOLII (L. BENSON) PARFITT, STAT. NOV. (CACTACEAE)

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For the past 43 years the yellow-spined southern Arizona hedgehog with the pale pink flowers has been known as a variety of Echinocereus engelmannii. Recent studies have shown it to be a genetically isolated, morphologically distinct species.

Echinocereus nicholii (L. Benson) Parfitt, stat. nov.
Basionym: Echinocereus engelmannii (Parry ex Engelm.) Lemaire var. nicholii L. Benson. 1944. Proc. Calif. Acad. Sci. ser. 4, 25:258.
Type: Arizona, Pima County, Silver Bell Mountains. 28 March 1941. L. Benson 10720 (ARIZ 24989).

During an ongoing survey of chromosome numbers in the Cactaceae of the western United States, E. nicholii was found to be diploid, 2n=22 (Appendix 1), whereas all varieties of E. engelmannii for which chromosome numbers are known are tetraploid, 2n=44 (Parfitt 1978; Pinkava & McLeod 1971; Pinkava & Parfitt 1982; Pinkava et al. 1977, 1985, unpubl.). This difference in ploidy level represents more than a diagnostic character; it represents a reproductive barrier between the two taxa. Any hybridization that may occur between them would result in a sterile triploid (2n=3x=33), effectively blocking the flow of genes between the parent taxa.

The discovery that E. nicholii is diploid led to a closer examination of the morphological differences between it and the tetraploids. Although they are similar in size and in the presence of a downward-pointing flattened spine, E. nicholii may be readily separated from E. engelmannii by a greater distance between the areoles on each rib, flowers pale pink instead of medium magenta, basal portion of the floral cup green instead of colored, and smaller seeds with large, distinct papillae instead of low, coalescent papillae.

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Appendix 1. Documentation for chromosome number determinations in Echinocereus nicholii: n=11 AZ, Pima County: TYPE LOCALITY, SW side of Silver Bell Mountains, elev. 2680 ft., Parfitt 3570 and 3573 with A. Zimmerman (ASU). All determinations are from meiotic anther material prepared according to the methods of Pinkava & McLeod (1971).